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AUTHOR Miyagawa, Shigeru
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ABSTRACT

An approach to the study of numeral quantifiers in Japanese reveals some fundamental properties of Japanese, especially those pertaining to movement. Using numeral quantifiers, a demonstration shows that the subject of unaccusative verbs in Japanese originates in the object position and moves to the subject position at S-structure. It is also demonstrated that the unaccusative hypothesis readily accounts for the Japanese "subject" verbal compounds without abandoning the First Sister Principle. In addition, it is concluded that the data and analysis presented provide a clear justification for the noun phrase trace, an unusual result since such clear empirical evidence for this category is rarely found. (MSE)

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Unaccusative Verbs in Japanese

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Shigeru Miyagawa

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UNACCUSATIVE VERBS IN JAPANESE

SHIGERU MIYAGAWA
OHIO STATE UNIVERSITY

In this paper I will take up the so-called numeral quantifiers in Japanese. A numeral quantifier is an expression used to count people, animals, and things, and is made up of a numeral and a classifier that agrees with the type of entity being counted. Two classifiers are exemplified in (1) and (2).

(1) Gakusei ga 3-nin hon o katta.
students NOM 3-cl book ACC bought
'3 students bought the book.'

(2) Hanako ga pen o 2-hon katta.
NOM pen ACC 2-cl bought
'Hanako bought 2 pens.'

In (1) the classifier -nin is used to count people, and in (2) the classifier -hon is used to count books. In both, the numeral quantifier is a syntactically separate phrase from the NP that it modifies. My point of interest is the particular structural condition governing the construal of the numeral quantifier with the appropriate NP.

A great deal of work has been done especially in the 70's and early 80's on the numeral quantifiers in Japanese (e.g., Kamio 1977, Katagiri 1983, Kuroda 1980, Haig 1980, Harada 1976, Inoue 1978, Okutsu 1974, Shibatani 1977, Tomoda 1982). Unfortunately, with a small number of exceptions, this body of work failed to produce significant results, primarily because these studies were conducted in a construction particular manner; that is, these studies only looked at the numeral quantifiers as a construction, without attempting to see what the quantifiers can tell us about the general properties of Japanese, and also of Universal Grammar. The approach I will take is to exploit the numeral quantifiers to reveal some fundamental properties of Japanese, in particular, those pertaining to movement. Using the numeral quantifiers, I will show that the subject of unaccusative verbs in Japanese originates in the object position, and moves to the subject position at S-structure, just as originally proposed for Italian. The same will be shown for the passive construction. I will also show the consequences of the unaccusative hypothesis for morphology. For Universal Grammar, the data I will present provides empirical evidence for NP trace (Chomsky 1981), a type of empty category whose existence is theoretically predicted, but the empirical justification for it has been extremely difficult to obtain. I will henceforth refer to numeral quantifiers using the abbreviation "NQ."

1. Mutual c-command requirement

In order for an NQ to successfully modify an NP, a particular structural relationship must hold between the NQ and the NP. (1) and (2) above exemplify cases where an NQ successfully modifies an NP. In (1) the NQ modifies the subject NP 'students', and in (2) the NQ modifies the object NP 'pens'. If we simply consider the linear order of words, we see that in both examples the NQ is adjacent to the NP it modifies. It is well known, however, that adjacency is not always required (Shibatani 1977). For example, an adverbial phrase can intervene between the NP and the NQ, as shown in (3).

(3) Gakusei ga kyoo 3-nin hon o katta.
students NOM today 3-cl book ACC bought
'3 students bought the book today.'

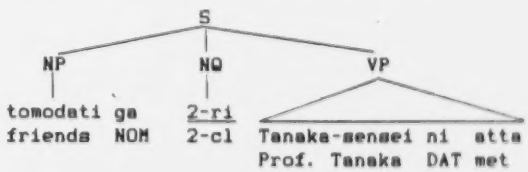
While a time adverb such as 'today' can intervene between the NP and the NQ, as shown in (3), other types of phrases obstruct a successful construal if placed between the NP and the NQ. Observe the contrast between (4) and (5) (cf. Kamio 1977).

(4) Tomodati ga 2-ri Sinzyuku de Tanaka-sensei ni atta.
friends NOM 2-cl Shinjuku in Prof. Tanaka DAT met
'2 friends met Prof. Tanaka in Shinjkuku.'

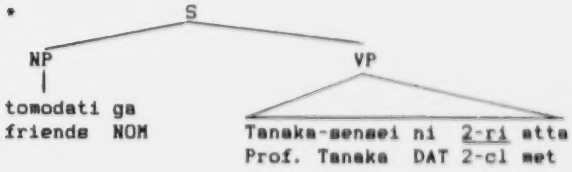
(5) *Tomodati ga Sinzyuku de Tanaka-sensei ni 2-ri atta.
friends NOM Shinjuku in Prof. Tanaka DAT 2-cl met
(Same as above)

In both (4) and (5), the NQ is intended to modify the subject NP 'friends', but only (4) is grammatical. To see why the NQ in (5) cannot modify the subject NP, let us compare the structure of these two sentences, which are given in (6) and (7).

(6) (=(4))



(7) (=(5)) *



The crucial difference between these two structures is that, in the grammatical example in (6), the NQ occurs outside the VP, but in the ungrammatical example in (7), the same NQ occurs inside the VP. To be more precise, in the ungrammatical structure in (7), the NQ does not c-command the NP it modifies. The definition of c-command is given in (8) (Reinhart 1979).

(8) A c-commands B if neither of A, B dominates the other and the first branching node dominating A also dominates B.

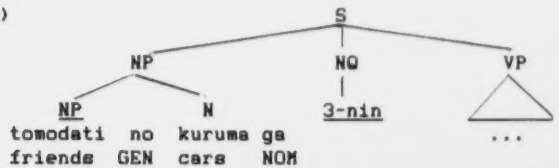
In (7) the NQ cannot c-command the subject NP because the first branching node, VP, that dominates it fails to dominate the subject NP. On the other hand, in the grammatical structure in (6) the NQ does c-command the subject NP because the first branching node that dominates the NQ, S, also dominates the subject NP.

It is evident, then, that the NQ must c-command the NP. (9) below demonstrates that the opposite must also hold, that is, the NP must c-command the NQ.

(9) *[$_{NP}$ Tomodati no kuruma] ga 3-nin kosyoosita.
friends GEN car NOM 3-cl broke down
'3 friends' cars broke down.'

The NQ in (9) is intended to modify the NP 'friends', but this is somehow blocked. As shown in (10), while the NQ c-commands the NP, the NP does not in turn c-command the NQ.

(10)

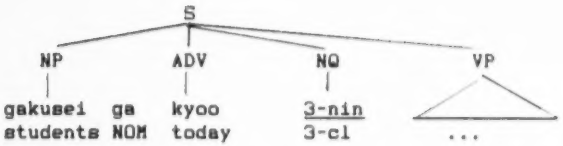


Based on this, I propose the condition in (11).

(11) Mutual c-command requirement
For an NQ to modify an NP, the NP or its trace and the NQ or its trace must c-command each other.[1]

The mutual c-command requirement accounts for all of the grammatical and ungrammatical sentences we have seen, including the example in (3) in which a time adverb occurs between the NP and the NQ. A time adverb can occur virtually anywhere in the sentence. It need not have a special node to which it attaches, but rather, it attaches to any available node. By this assumption, the relevant structure of (3) is (12).

(12)



As shown, the NP 'students' and the NQ c-command each other.

The mutual c-command requirement in (11) allows the trace of the NQ or the NP to participate in the mutual c-command. This is demonstrated in (13) and (14).

(13) 3-mai$_i$, kodomo ga sara o t_i watta (koto).
3-cl child NOM plates ACC broke fact
'(The fact that) the child broke 3 plates.'

(14) Hon$_i$ o, Taroo ga [$_{VP}$ t_i 2-satu katta].
book ACC NOM 2-cl bought
'Taro bought 2 books.'

In (13) the NQ modifying the object NP has been scrambled to the head of the sentence. Despite this the constural is still possible because the trace fulfills the mutual c-command requirement with the object NP. In (14), it is the object NP which has been scrambled to the head of the sentence, and its trace meets the mutual c-command requirement with the NQ remaining in the VP (cf. Kuroda 1980, Saito 1983).

In the remainder of the paper, I will use the mutual c-command requirement on the NQ to show that the passive in Japanese involves movement. In addition, I will show that those verbs that correspond to unaccusatives also involve the movement of the deep object to the subject position. I will begin with the passive formation.

In Japanese, there are two types of passives, commonly called "direct" and "indirect" (or "pure" and "adversitive," cf. Kuno 1973). Both are formed by attaching the bound passive morpheme -(r)are to a verb. The direct passive is similar to the English passive, in that, as shown in (15), the passive morpheme attaches to a transitive verb and the subject is the original object NP of the transitive verb. The agentive phrase is marked by the particle ni 'by'.

(15) Kodomo ga oya ni sikar-are-ta.
child NOM parents by scold-pass.
'The child was scolded by his parents.'

The indirect passive differs from the direct passive in that the attachment of the passive morpheme -(r)are results in the addition of an experiencer NP. In the indirect passive the passive morpheme can attach to intransitive and transitive verbs, as shown in (16) and (17).

(16) Taroo ga ame ni fur-are-ta.
NOM rain DAT fall-pass.
'Taro was rained on.'

(17) Hanako ga sensei ni kodomo o sikar-are-ta.
NOM teacher DAT child ACC scold-pass.
'Hanako had her child scolded by the teacher.'

The referent of the added experiencer phrase is understood to be somehow affected by the action, usually in an adversitive fashion (cf. Kuno 1973).

The mutual c-command requirement on the NQ gives clear evidence that the direct passive involves movement while the indirect passive does not. The crucial evidence for movement for the direct passive is given in (18).

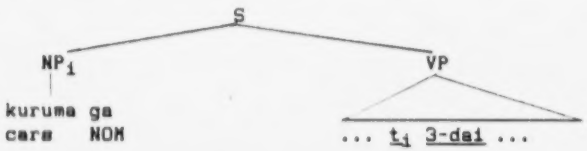
(18) Yuube, kuruma ga doroboo ni 2-dai nusum-are-ta.
last night cars NOM thief by 2-cl steal-pass.
'Last night, two cars were stolen by a thief.'

The important point to note is that the NQ occurs in the VP, and it successfully modifies the subject NP 'cars'. (18) is in sharp contrast to a nonpassive example such as (19) below.

(19) *Tomodati ga Sinzyuku de Tanaka-sensei ni 2-ri atta.
friends NOM Shinjuku in Prof. Tanaka DAT 2-cl met
'2 friends met Prof. Tanaka in Shinjkuku.'

(19) is out because the NQ in the VP fails to c-command the subject NP for which it is intended. We can account for the grammaticality of (18) if we assume that the subject NP starts out in the object position, and is moved to the subject position, leaving behind a trace. The relevant portion of the structure for (18) is given in (20).

(20)



Unlike the direct passive, the indirect passive does not "switch" the order of the arguments. Instead, it adds an experiencer NP, which then becomes the subject of the passive verb. What is involved here is not movement, but simply the addition of an extra argument, the experiencer argument. This predicts that an NQ within the VP cannot modify the subject NP of the passive because there is no trace coindexed with the subject NP. This is illustrated in (21).

(21) *Kodomo ga [VP ame ni 2-ri fur-are-ta]
children NOM rain DAT 2-cl fall-pass.
'Two children were rained on.'

The NQ 2-ri occurs in the VP without the benefit of a VP-internal trace coindexed with the subject NP 'children'. The NQ therefore fails to c-command the subject NP it is intended to modify, in violation of the mutual c-command requirement.

2. Unaccusative Verbs

I will now turn to the unaccusative verbs. It has been argued that the subject NP of certain "intransitives" in Italian originates in the VP (Perlmutter 1978). These are the verbs that Perlmutter (1978) calls "unaccusative." As one piece of evidence, Burzio (1981, 1986) notes that the partitive clitic NE can only go with the object of transitive verbs and the subject of unaccusative verbs.

(22) Gianni NE ha insultati due.
of-them has insulted two
'Gianni has insulted two of them.'

(23) *NE telefonano molti.
of-them telephone many
'Many of them telephoned.'

(24) NE arrivano molti.
of-them arrive many
'Many of them arrive.'

In (22) NE goes with the object of a transitive verb. In (23), the clitic is intended to go with the subject of the unergative verb telefonano, but as shown, the sentence is ungrammatical. In contrast to this, (24), which is also an "intransitive" construction, allows the clitic to be construed with the subject NP. Following Perlmutter (1978), Burzio suggests that the subject of arrivano is in fact the object of the verb at D-structure, thereby making it possible to have the generalization that NE can only go with (deep) objects. He shows that this is true for other unaccusative verbs.

The mutual c-command requirement on the NQ makes it possible to show that the unaccusative verbs in Japanese also involve the movement of the deep object to the subject position at S-structure. To see this, look at (25), (26), and (27).

(25) Gakusei ga [VP ofisu ni 2-ri kita]
students NOM office to 2-cl came
'2 students came to the office.'

(26) Otoko ga [VP baa ni 2-ri haitta]
men NOM bar to 2-cl entered
'2 men entered the bar.'

(27) Doa ga [VP kono kagi de 2-tu aita]
door NOM this key with 2-cl opened
'2 doors opened with this key.'

In all of these examples, the subject NP is successfully modified by an NQ within the VP. For example, in the last example, (27), the NQ in the VP successfully modifies the subject 'doors.' This is evidence that there is a trace in the VP coindexed with the subject, just as we saw for the direct passive. This demonstrates that for the verbs in these examples, "come" in (25), "enter" in (26), and "open" in (27), all of which are typical unaccusative verbs, the surface subject originates in the object position, in accordance with the unaccusative hypothesis.

A crucial assumption behind the examples in (25) through (27) is that the phrase that intervenes between the NP and the NQ, such as 'with this key' in (27), is in the VP. This is crucial because if the intervening phrase were outside the VP, dominated directly by the S node, these examples have no bearing on the issue of unaccusativity, since there would be no guarantee that the NQ in these examples is in the VP. We find demonstration that phrases such as 'with this key' is indeed in the VP in examples such as (28).

(28) *Kodomo ga kono kagi de 2-ri doa o aketa.
children NOM this key with 2-cl door ACC opened
'2 children opened a door with this key.'

In (28) the postpositional phrase 'with this key' intervenes between the subject of a transitive verb and the NQ intended to modify the subject. As shown, the sentence is ungrammatical, indicating that the NQ is in the VP, and unable to c-command the subject NP. What causes the NQ to be in the VP is that the postpositional phrase 'with this key' itself is in the VP.

In contrast to the unaccusative verbs just discussed, the unergative verbs, which are "intransitives" with deep subjects (Perlmutter 1978), do not allow an NQ in the VP to modify the subject NP. This is shown with the verb "telephone" in (29) and "dance" in (30).

(29) *Gakusei ga [VP zibun no kane de 2-ri denwa-sita]
students NOM self 's money by 2-cl telephoned
'2 students telephoned using their own money.'

(30) *Kodomo ga [VP wa ni natte 10-nin odotta]
men NOM circle become 10-cl danced
'10 kids danced in a circle.'

Unlike the unaccusative cases, these examples do not contain a trace in the VP to fullfill the mutual c-command requirement, hence the intended construal is impossible because the NQ in the VP cannot c-command the subject NP.

3. Further Evidence: NQ Scrambling

I will now present another argument to support the unaccusative hypothesis in Japanese. In (13) given earlier, I presented an example in which an NQ has moved to the head of the sentence by scrambling. I will show that the behavior of the NQ in scrambled constructions gives additional support for the movement analysis of the direct passive and the unaccusatives.

A clear asymmetry reveals itself when we scramble an NQ that modifies an object NP and one that modifies a subject NP.

(31) Futatu, kodomo ga kozutumi o okutta.
2-cl child NOM packages ACC sent.
'The child sent 2 packages.'

(32) ?*2-ri$_i$, naifu de, kodomo ga t_i roopu o kitta.
2-cl knife by chilren Nom rope Acc cut
'2 children cut the rope with a knife.'

In (31), which is grammatical, an NQ modifying the object NP has been scrambled to the head of the sentence. In (32), which is ungrammatical, an NQ intended to modify the subject NP has been scrambled. This, then, is a clear instance of a subject/object asymmetry, in fact, one of the clearest case of such an asymmetry found in Japanese so far. Katagiri (1983), who first noted this particular asymmetry, did not attempt to formulate an account. One way to state the generalization is to say that only a properly governed NQ can move, thereby correctly limiting NQ movement to those that modify the object NP, as in (31).[2] This generalization in turn makes predictions about passives and unaccusative verbs. If what I have claimed about the direct passive and the unaccusative verbs is correct, the predictions in (33) should hold.

(33) NQ Scrambling
Grammatical for NQ modifying: (a) object of transitive verbs;
(b) subject of direct passive;
(c) subject of unaccusative verbs.
Ungrammatical for NQ modifying: (d) subject of transitive verbs;
(e) subject of unergative verbs.

All of these predictions are empirically verified. We have already seen (a) illustrated in (31), in which scrambling of an NQ modifying the object of a transitive verb results in a grammatical sentence. We have also seen (d) illustrated in (32), in which scrambling of an NQ modifying the subject of a transitive verb results in an ungrammatical sentence. (34) below illustrates (b), which predicts that scrambling of an NQ modifying the passive subject is grammatical.

(34) Yuube, 2-dai, doroboo ni, sinsya ga nusum-are-ta.
last night 2-cl thief by new cars NOM steal-pass.
'Last night, 2 new cars were stolen by a thief.'

The examples in (35) and (36) bear out (c), which predicts that scrambling of an NQ modifying the subject of an unaccusative verb should also be fine.

(35) 2-ri$_i$ ofisu ni gakusei ga t_i kita.
NQ office to students NOM came
Lit: '2$_i$, to my office, t_i students came.'

(36) 2-ri$_i$ ryokan ni kyaku ga t_i tuita.
NQ inn to guests NOM arrived
Lit: '2$_i$, to the inn, t_i guests arrived.'

In contrast, the unergative verbs do not allow scrambling of the NQ, as predicted in (e). This is shown in (37).

(37) *2-ri$_i$ konpyuutaa de gakusei ga t_i keisan-sita.
NQ computer by students NOM calculated
Lit: 2$_i$, by a computer, t_i students calculated.'

To summarize, NQ scrambling is allowed for those modifying the object of transitives and the subject of passives and unaccusatives because all involve deep objects. But the subject of transitive verbs and unergatives is in the subject position to begin with, hence an NQ modifying this subject cannot be moved because it is not properly governed by the verb. This then gives further credence to the analysis of unaccusative verbs and passives as having a subject that originated in the deep object position, leaving behind a trace. While the movement analysis of the passive in Japanese has been proposed by several people, this is the first time that evidence has been put forth to show that the subject of unaccusative verbs behave in a similar fashion.

4. Verbal Compounding

As my final point, I will look at the consequence of the unaccusative hypothesis for verbal compounding. Roeper and Siegel has proposed the First Sister Principle to account for the fact that the subject nominal cannot appear in English

verbal compounds. The principle is given in (38).

(38) First Sister Principle (Roeper and Siegel 1978)
The nominal in a verbal compound corresponds to the 'first sister' of the verb in syntax.

Thus, the two compounds in (39),

(39) truck-driving, pizza-eating

are fine because the nominals, truck and pizza, correspond to the first sister of the verb in syntax. In contrast, the verbal compounds in (40),

(40) *boy-running, *snow-melting

are bad because the nominal corresponds to the subject, hence it is external to the VP and never a first sister to the verb.

Unlike English, Japanese allows the subject nominal to occur in verbal compounds. Some examples are listed in (41).

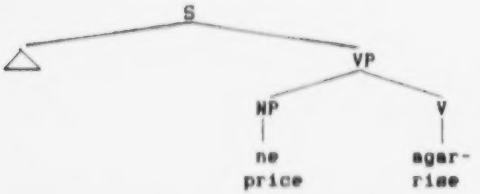
(41) ne-agari 'price-rising', sina-gire 'merchandize-running out', to-zimari 'door-closing (locking up)', yuki-doke 'snow-thawing'

These are ostensibly counterexamples to the First Sister Principle. Noting examples such as these, linguists such as Kageyama (1982) and Sugioka (1984) suggest that this principle fails to apply in Japanese. On a closer inspection, however, we can see that the verbs that allow this subject verbal compounding are limited to one type: the unaccusative verbs. All of the verbs in the compounds in (41) are of this type. In contrast, unergative verbs do not allow subject compounding, as demonstrated in (42).

(42) *inu-hoe 'dog-barking', *kodomo-odori 'children-dancing', *tomodati-warai 'friend-laughing'

The possibility of subject compounding with the unaccusative verbs but not with the unergative verbs, as I just showed, is perfectly compatible with what I have argued earlier, that the subject of an unaccusative verb originates in the object position. By this analysis, the subject nominal is the first sister to the verb at D-structure, hence is in accordance with the First Sister Principle. For example, the first verbal compound in (41), "price-rising", would have the D-structure construction in (43).

(43)



As long as verbal compounding in Japanese takes place at D-structure, and the unaccusative hypothesis is assumed, the First Sister Principle can correctly predict the possible and impossible subject verbal compounds.

5. Conclusion

I used both well-known and new facts about the numeral quantifiers in Japanese to argue that both the passive and the unaccusative verbs in Japanese involve the movement of a deep object to the subject position. The movement analysis of the passive verb has been argued for before, but this is the first time that a clear case has been made for the unaccusative hypothesis. I also showed that the unaccusative hypothesis readily accounts for the Japanese 'subject' verbal compounds without abandoning the First Sister Principle. I should note that Terada (1987) has independently proposed the unaccusative hypothesis for Japanese in a recent paper. She also uses the numeral quantifiers, though the class of sentences she investigates is different.

Finally, the data and the analysis presented in this paper provide a clear justification for NP trace; it is rare to find such clear empirical evidence for this empty category.

FOOTNOTES

[1]In another work (Miyagawa, forthcoming), I show that the mutual c-command requirement results from the fact that the numeral quantifiers behave the same as the small clause in English, the latter governed by the theory of predication (e.g., Williams 1980, Rothstein 1983). The structural condition placed on predication is mutual c-command, hence the appearance of this condition for the numeral quantifiers. See Ueda 1986 for an independent analysis of the numeral quantifiers as a predicate.

[2]See Miyagawa, forthcoming, for a more explicit condition on when an NQ can scramble.

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